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## THE DIAGNOSIS OF GAS CASUALTIES*

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I am not going to follow completely the suggestions of our Secretary, for as the hour is so late, I intend to confine my remarks solely to the subject of the diagnosis of gas poisoning, and to leave the question of the treatment of gas casualties severely alone.

Doubtless, most of you, like myself, have within recent weeks attempted to acquire at least a superficial, theoretical knowledge of the potentialities of gas warfare. You will have attended lectures or perused what literature there is available on the subject, and all of you, I expect, have studied that excellent summary published so opportunely by the N.V.M.A.

All descriptions thus given treat of each gas as the entity it is. Our knowledge concerning it is summarised or otherwise dealt with from A to Z as it were, so that we are enabled to follow the whole story and to visualise the processes which have resulted in the casualty, that is, if we can but be sure as to which of the gases we have at the moment to deal with. In other words, we are never likely to have much difficulty in diagnosing "Gas poisoning," but until we have attained considerable practical experience, we are likely to have difficulty in assigning the symptoms exhibited by a patient to the particular gas of which the symptoms are a manifestation, and especially if the casualty is divorced from its gas environment, as it well might be under certain conditions.

For instance, if any of us were to enter a street in this city, after enemy aircraft had been over, and find some of the houses wrecked, windows blown in, the carcases of animals lying among debris, and the scent of geraniums overhanging all, we could confidently ascribe the cause of the damage and the particular poison which had been used, but if one of the exposed animals was brought to us next day without any definite history, most of us, I think, would have considerable difficulty in making an accurate diagnosis.

The problem is made somewhat easier for us when we realise that, as far as is known, only two classes of war gases have any interest for us as veterinary surgeons, namely, the vesicants and the asphyxiants, for it appears that the domesticated animals are practically unaffected by the other varieties; and again, the range of gases which we are likely to encounter must be narrowed by the conditions prevailing at the time. Thus in Britain at the moment, with the population free to move, the climate such as it is, and with the enemy's means of transport somewhat restricted in carrying capacity and power of manoeuvre, the most suitable of the known gases and thus the one we would most likely have to deal with, must surely be mustard.

On the other hand, in a battle zone where conditions forbid or restrict movement, and where the climate might conceivably be very different from what we experience here, he might find it profitable to use asphyxiants as well as vesicants. Taking everything into consideration then, the known gases which are likely to interest us professionally are chlorine, phosgene, mustard and lewisite. I believe that a comparison of the symptoms produced by these war gases as they might be exhibited by an animal at certain periods after exposure, may do something to improve our ability to diagnose, and I propose to draw your attention to what I think are the more outstanding signs which might be seen at four given stages following exposure, namely :—

(*a*) Immediately after exposure.
(*b*) Up to 12 hours after exposure.
(*c*) After 12 hours after exposure.
(*d*) After death.

With the exception of the last, the stages are, of course, selected quite arbitrarily, and while describing the symptoms, I realise how much they must vary according to the conditions which have given rise to them. For that reason we would in every case attempt to elicit a history, for if a reliable one were forthcoming, it would in all probability remove any difficulty in diagnosis. In any event, we would attempt to obtain information especially concerning the time and duration of exposure, and the possible concentration of the gas. Should the patient be exhibiting typical symptoms and the history harmonise with them, a glance may suffice for diagnosis, but failing that, the significance of each sign of abnormality must be appraised.

### (*a*) Casualties Seen immediately after Exposure

Immediate uneasiness, coughing (sneezing in dogs), with a watery discharge from the nose and eyes, along with accelerated respiration which is painful and difficult, will almost certainly denote *chlorine*.

*Lewisite*, too, acts quickly, but its effect on the visible mucous membranes is more violent. There is profuse discharge from the eyes, nose and mouth. The eyelids become swollen and the eyes closed. If one is to rely on objective symptoms alone there is little to differentiate it from chlorine poisoning at this stage.

*Phosgene* causes no immediate inconvenience in dogs or horses, so if symptoms are immediately apparent, phosgene can be excluded as a possible cause.

*Mustard*, except in really overpowering concentration, will have a delayed action, but dogs very soon become depressed, vomit occasionally, and may pass diarrhoeal blood-stained faeces.

* Address to the Scottish Metropolitan Division, N.V.M.A., at a meeting held in the Royal (Dick) Veterinary College, Edinburgh, on October 11th, 1939.

(*b*) Casualties Seen up to 12 Hours after Exposure

The effect of *chlorine* will have been apparent all the time, and at the end of 12 hours the symptoms may have somewhat subsided. There is likely to be a copious, frothy, perhaps blood-stained discharge from the nose. The pulse will be somewhat full and bounding. The respirations may be slower and less laboured towards the end of the period, indicating that stage of comparative ease which separates the period of immediate irritation of cell destruction, and that of the onset of pneumonia or sepsis.

If the gas has been *phosgene*, there should be little or no indication of irritation of the eyes. The discharge from the nose will be markedly frothy, very copious, and probably blood-stained. The pulse is bounding, full, and in the horse, at the rate of 80 to 100. The difficulty in breathing, so characteristic of phosgene poisoning, should by the 12th hour be most striking—the outstretched head, dilated nostrils, the mucous membranes of which are acutely congested; accelerated, shallow breathing. The picture in the horse is very similar to that seen in acute congestion of the lungs following over-exertion.

If the exposure has been to *mustard*, it is probable that the eyes, mouth and skin will show the most prominent lesions at this stage. The eyes may be already closed and swollen, but in any event they will show acute irritation. A watery discharge from the nose is likely to be observed, as well as profuse salivation. The skin, where the hair is scanty or where sweating has occurred, will be oedematously swollen and, in the dog, some red discoloration may be noticeable. (In none of the domesticated animals does actual blistering occur.) The horse's pasterns may be filling at this stage, and the hair of affected areas will be standing on end. If the contamination has been by minute droplets, the effect produced on the horse's skin is very like the first sign of ringworm.

If the exposure has been to heavy concentration of fumes, the respirations after about the 8th hour become irregular and laboured, forced but not rapid. A soft gurgling snore accompanies each breath, and coughing is frequent.

In *lewisite* poisoning the symptoms are not characteristic. They resemble mustard, but are likely to develop to their full extent considerably earlier. Skin irritation follows exposure almost immediately, and continues unabated.

(*c*) Casualties Seen after 12 hours from Exposure—*i.e.*, when the full effect of poisoning has developed.

In many instances the general appearance of the animal will be such as to enable one to decide immediately from what particular form of poisoning it is suffering.

In *chlorine* poisoning, the respiratory symptoms will be most apparent, although after the 24th hour, and up to the third and fourth day, they may be subdued. At the end of that period, however, the onset of pneumonia, which is in all cases associated with a purulent bronchitis, will again bring them into evidence. There is a persistent cough.

In *phosgene*, except after very light exposures, no relief must be expected up to the 48th hour, but in the majority of animals which live till then, a lessening of the pulmonary oedema may occur. Later a typical lobar pneumonia may supervene, which is very often complicated by sepsis. The distinguishing feature in phosgene poisoning is that the damage to the lungs occurs in the alveoli and smaller bronchioles, while the bronchi and upper respiratory tract are not seriously involved. Coughing is not a marked symptom.

In *mustard* poisoning the acute and severe damage done to the eyes, nose and mouth, and the swollen painful lesions on the skin or the necrosis and ulceration, leave little doubt as to the cause. When the coronets and heels of horses are attacked, intense lameness and extensive sloughing results, so that even the hoof may be cast.

If, however, the exposure has been for a prolonged period to a comparatively light concentration, lung symptoms may predominate. A thick false membrane covering the larynx, trachea and bronchi, as it becomes detached, may in itself produce recognisable symptoms, and is sure to be associated with difficulty and noise in breathing. In other words, like chlorine, mustard affects the upper regions of the respiratory tract, but the damage done is more deep seated than that produced by chlorine, and the effects of the gas on the eyes and other areas should be enough to distinguish it.

Possibly the only distinguishing feature of *lewisite* is that the damage is more superficial, there is less oedema, and recovery is quicker.

(*d*) Casualties Seen after Death

As considerable diagnostic evidence is likely to be afforded by the study of the dead animal, I have tried to summarise the more striking signs which can be readily exposed.

In death from *chlorine* poisoning, decomposition sets in early; the head may be lying in a pool of fluid; blood clotting is delayed, and the blood is dark, almost black in colour.

The mucous membranes of the trachea and bronchi are deeply injected and covered with a sticky membranous exudate, which is removed with difficulty.

The lungs are voluminous and doughy to the touch, but are faintly crepitous. The colour is a brilliant red in variegated shades on a purple background. The heart is dilated on both right and left sides. The abdominal organs are markedly congested, especially the liver and spleen.

In death from *phosgene*, decomposition occurs within a few hours. A frothy fluid, clear yellow or blood-stained, oozes in great quantity from the mouth and nose.

The trachea is filled with a frothy fluid, the bronchi with a non-frothy, clear, faint-yellow fluid. The pleura is smooth, glistening, moist. The lungs are of great volume and non-collapsible. They are spectacularly mottled with white patches and deep red ones on a background of bluish hue. Their consistency is doughy.

The heart is dilated, especially the right side. In the abdominal cavity there is engorgement of the large blood vessels, and congestion of the viscera and liver—especially the liver. The spleen is normal.

In death from *mustard* gas (from which the animal rarely dies in less than 18 hours, usually on the second or third day) the characteristic skin lesions may or may not be apparent. The conjunctiva is red and congested, but still may be smooth and clear. The trachea and bronchi have a yellowish, grey false membrane, which peels off easily, and may make a complete cast of the bronchial tube.

The lungs are only slightly collapsed. The lower lobes are the most voluminous, and are of a light,

dusky reddish-purple colour, and of a doughy consistency. The cut surface is dry. The upper lobes are brighter red. Air-containing and emphysematous areas alternate with firm solid ones, the cut surface of which is somewhat wet. An entire lobe may have collapsed, and is dark red in colour, and solid to the touch.

The abdominal viscera are affected by an oedematous inflammation, in which the oesophagus, pharynx and oral cavity are involved, or there are marked signs of haemorrhagic gastro-enteritis.

In death from *lewisite*, the trachea and bronchi are congested, and may be covered with a light membranous exudate. The destruction of the bronchial epithelium does not extend as far down into the small divisions of the bronchial tree as that produced by mustard. The lungs are oedematous, but not to such an extent as is seen in phosgene poisoning. There are no lesions in the abdominal cavity.

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It is perhaps needless to say that my personal observations of war gas poisoning are few and I have based most of my remarks upon information obtained from the R.A.V.C. Gas Expert and from Winternitz's book, *Pathology of War Gas Poisoning*. This book will appeal particularly to those of you who are interested in the subject as it affects dogs, for there you will find that aspect of it dealt with in great detail and described in a lucid and very readable manner.


References

Richters, C. E. Animals in Chemical Warfare. *J. of R.A.V.C.* **7**. 78-96.

Vedder, E. B. The Medical Aspect of Chemical Warfare. Williams and Wilkins, Baltimore, U.S.A.

Winternitz, M. C. Pathology of War Gas Poisoning. Yale University Press.


## WINTER SPORTS FOR ANIMALS

On the occasion of the 25th anniversary of the creation of the Swiss National Park, in Val Clouza, in the Lower Engadine, Professor A. Pictet, of Geneva, published his observations made there on wild animals at play, in particular baby marmots, which play hide-and-seek and leap-frog among the rhododendron bushes, and seem to enjoy these games thoroughly.

Squirrels and hares roll or wrestle among themselves in the snow, while the marmots slide along the snow slopes well seated on the snow with their arms folded on their breasts, exactly as boys do in the mountain valleys.

Young chamois, according to Dr. Pictet's observations, follow with interest and curiosity the games of baby marmots and soon begin to imitate them: they also try *rudsching*, but as they are generally clumsy they fall and tumble down the slopes with their legs in the air. But they climb again to the top and begin their *rudsching* again and again until they succeed in sliding down on their four legs, a game they seem to enjoy immensely.—*The Times*.

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Following a discussion on the position, due to the war, of post-graduate research students, the Council of the Institute of Chemistry, at its December meeting, passed the following resolution:—"That the Council of the Institute records its concern about the future supply of properly qualified research chemists, and desires to call the attention of the Government and all training authorities to the present danger of diminution in the number of students of post-graduate standing."

# CONTAGIOUS DISEASES OF THE HORSE UNDER WAR-TIME CONDITIONS*

## WITH SPECIAL REFERENCE TO DIAGNOSIS AND TREATMENT

E. S. W. PEATT, O.B.E., F.R.C.V.S.

Contagious diseases of horses always increase in war-time because of the movement and concentration of horses in large numbers, thus facilitating the spread of disease by contagion, and also because of the conditions of hardship under which the animals are kept. Some idea of the tremendous increase of sickness from all causes in Army animals in war-time may be obtained from the following statistics of the last war: in 1917 the strength of animals on all fronts totalled over one million, of which four hundred and thirty-six thousand were in France; the average daily number constantly sick was one hundred and ten thousand, the sick rate rising from about 3 per cent. in peace-time to 11 per cent. in war-time. The total dead wastage from August, 1914, to November, 1918, from all causes, was more than half a million.

*The chief causes of mortality were*:—

1. Battle casualties and other injuries and surgical conditions.
2. Debility and exhaustion.
3. Respiratory diseases.
4. Mud-borne diseases, *i.e.*, ulcerative lymphangitis and gangrenous dermatitis.
5. Mange.

As can be seen from this, contagious diseases were successfully controlled, as the losses from this cause were comparatively small.

It is impossible in a short space to deal in detail with all the contagious diseases met with under war-time conditions; I will therefore confine my remarks to the most important, paying particular attention to diagnosis, treatment and method of dealing with outbreaks

### Catarrh.

In itself this condition is not a serious one, but as a preliminary symptom of more serious disease, its importance cannot be over-estimated, and it should be looked upon by Veterinary Officers in war-time as a danger signal. It may be the forerunner of influenza, contagious pneumonia, strangles or glanders, and for this reason, all catarrh cases should be strictly isolated and a definite diagnosis made. If glanders is indigenous in the country, or cases have occurred recently in the force or neighbourhood, all catarrh cases should be tested with mallein.

In the Great War the best results were obtained by providing catarrh hospitals solely for the treatment of this disease, and all animals with nasal discharge were sent there; as a result outbreaks of strangles, glanders, etc., were localised.

### Coughs, Colds and Strangles.

Occurring mostly in remount depots these conditions cause a lot of temporary incapacity and should be

* Presented to the Scottish Metropolitan Division, N.V.M.A., at a meeting held in the Royal (Dick) Veterinary College, Edinburgh, on October 11th, 1939.

treated as in peace-time. I understand that sulphanilamide preparations have proved very effective in the treatment of strangles, but have no personal experience of its action.

**Influenza and Pink Eye.**

Usual symptoms are loss of appetite, great dullness, high temperature (104-6° F.), intensely injected conjunctivae with swelling of eye-lids, lachrymation and nasal discharge. Outbreaks occur very suddenly and there is great variation in virulence and the organs attacked. The various forms are :—

1. Catarrhal ... Usually mild.
2. Pneumonic ... Often complicated by pericarditis.
3. Abdominal ... Colic and diarrhoea.
4. Nervous ... Weakness, stupor and incoordination.
5. Cellulitic form Dropsical swellings.

Influenza can be a very serious danger in war-time, as it runs through the horses of an army or country at a great pace and may incapacitate large numbers of animals.

Again, early diagnosis and isolation are of great importance ; the points to remember in diagnosis are the sudden onset and rapid spread of the disease.

Once an outbreak has occurred, working isolation in units can be practised but it is imperative that animals are not worked in the early stages of the disease, and, in order to avoid this, a good practice is to take the temperatures of all horses before going to work, and any animals with a temperature of 102° F. or over should not go out.

*Treatment.*—Medicines are of little use : rest, fresh air, easily digested food, shade in hot countries and warm clothing in cold are indicated. Plenty of drinking water containing magnesium sulphate and potassium nitrate should be given. Strong purgatives should not be administered.

*Convalescence.*—Do not work too soon, or roaring and heart affections may supervene.

**Shipping Fever and Contagious Pneumonia.**

A lot of doubt still exists as to the nature of the disease called contagious pneumonia, and I propose leaving it at that and mentioning shipping fever only, which, although not strictly a contagious disease, affects large numbers of horses in war-time. It is caused by the unaccustomed hardships, excitement and fatigue entailed in transporting horses by rail and sea, or indeed by concentrating them in large numbers under unaccustomed conditions and strange surroundings ; this lowers their vitality and resistance to the attacks of organisms.

*Symptoms.*—High temperature, nasal discharge, pneumonia, and pleurisy ; collapse, cold extremities, feeble pulse, etc.

*Treatment.*—As for pneumonia. Serum treatment if available.

*Control.*—Take temperatures of all animals before rail journeys and do not entrain those at 102° F. or over. Limit duration of train journeys and provide for feeding and watering.

**Glanders.**

In the Great War the incidence of glanders was small, due to routine testing with mallein. Animals from the U.S.A. and Canada were tested before being shipped, on arrival in England, on joining units, and again before going overseas. All animals were tested on admission to veterinary hospitals. The largest outbreak occurred in Egypt.

*Diagnosis.*—Early diagnosis is of the greatest importance, and any animal with catarrh or sores on any part of the body should be viewed with suspicion. The text-book symptoms of fever, glairy, sticky nasal discharge, hard tumefaction of the submaxillary lymphatic glands and ulcers of the nasal mucous membrane, are liable to great variations. For instance, in acute glanders in mules the symptoms may be a swelling of the whole face and head, accompanied by snuffling or snoring respirations. I have good cause to know this because of the following experience in Salonica in 1917. As orderly V.O., I was called out one night by the N.C.O. on duty to attend to a mule under treatment for laryngitis which had suddenly begun to show symptoms of suffocation. The patient was breathing with great difficulty, there was swelling round the throat and head, and the animal was staggering about making snoring noises. The N.C.O. had a tray of instruments and a tracheotomy tube ready, so with the assistance of two men and a hurricane lamp I inserted the tube with great difficulty, and in doing so received a shower of mucus and blood, from the trachea, in the face. Immediately, and for the first time, the possibility of glanders struck me, and at once I immersed my head in a bucket of creolin which was beside me, and which incidentally was very strong and, in consequence, caused severe irritation of the skin of my face for several days. The mule died in two to three hours, and on *post-mortem* examination proved to be a case of acute glanders pneumonia with three rows of glanders ulcers in the trachea. For weeks I imagined I had glanders. This was one of the first cases in an outbreak of glanders occurring amongst a shipload of mules received in Salonica from the U.S.A. and about two hundred animals were destroyed.

The mallein test is not reliable in mules, as exemplified in this and other outbreaks, as all these mules had passed the test on arrival a few weeks before the outbreak.

Acute glanders is more common in mules and donkeys than in horses ; animals may develop symptoms and die within 48 hours.

Farcy

Again the classical symptoms of cording of the lymphatic vessels with nodules, buds or ulcers along their course discharging yellow pus, may vary considerably. Isolated abscesses in any part of the body without apparent cause should be looked on with suspicion. I have seen an innocent-looking abscess on a horse's back that proved to be a glanders lesion.

Diagnosis by Mallein Test

If any doubt exists, test with mallein, either by the subcutaneous or intradermo-palpebral methods. In the case of mules the complement fixation test has proved very reliable, but the services of a laboratory are necessary for this, and also a period of 60 days must elapse before accurate results can be expected, because malleining an animal raises the titre.

The eye disc test can be used in cold climates, *e.g.*, Canada, where mallein freezes in the syringe. Care should be taken that the disc dissolves before the animal is released.

DEALING WITH OUTBREAK

1. Destroy all affected animals and burn or bury carcases.
2. Isolate in-contacts.
3. Evacuate stables or lines occupied by affected animals.
4. Place used water troughs out of bounds.
5. Inspect carefully all animals of the unit. Note especially the nostrils for ulceration and discharge, the submaxillary glands for swelling, and the body—especially the legs—for swellings, ulcers and corded lymphatics. Disinfect the hands continually.
6. Apply the mallein test (*a*) to all animals in unit, (*b*) repeat in 14 days in case of in-contact animals.
7. Carry out routine disinfection.
8. The outbreak can be declared over after second test, if no further cases occur.
9. In-contacts can continue to work in isolation after passing the first test. In dealing with an outbreak amongst animals running loose in paddocks, either tie them up at suitable intervals or, if the numbers are too great, divide into small groups.

**Epizoötic Lymphangitis.**

*Symptoms and Diagnosis.*—Ordinarily this is a local disease and shows itself as small nodules or pustules about the size of a pea at the seat of an original wound or scar, and painful corded lymphatics radiate therefrom. Buds form on the corded lymphatics; they ulcerate and rupture, discharging pus that is at first thick and, later, yellowish and curdy, and the ulcers show bright red granulations. Occasionally the first signs are those of ordinary lymphangitis; in some cases there are lesions in the mucous membrane of the nostrils, starting as nodules which burst later and form well-defined ulcers.

The course of the disease is very slow and cure difficult, relapses occurring.

DIFFERENTIATE FROM GLANDERS BY :—

1. Healthy appearance of patient.
2. Absence of fever.
3. Tendency for ulcers to heal.
4. Pus whitish and thick.
5. Mallein test.
6. Cryptococci in pus.

DEAL WITH AN OUTBREAK AS FOLLOWS :—

*Affected Animals*
1. Isolate.
2. Confirm diagnosis.
3. Destroy and burn carcase.
4. Investigate origin of disease, trace movement of animals affected.

*Disinfection*
5. Vacate and disinfect stables or standings.
6. Disinfect harness and equipment.
7. Burn clothing of affected and of in-contact animals.
8. Burn dressings.

*Dressing of Wounds*
- Use separate piece of cotton wool for each wound and burn when finished.
- Sterilise instruments after each case.
- Use dredgers for dry dressing.
- Use Eassie's oily dressing—it keeps flies off.

*Apparently Healthy Animals*
- Prevent kicks and injuries.
- Examine all animals for wounds and make record of every wound reported.
- Examine discharge from all wounds.

*Unit*: Place in working isolation for six months.

**Skin Diseases**

**Mange.**

In all wars this disease has been a bugbear to commanders of horsed units, and the wastage caused from it indirectly through debility, loss of condition and general inefficiency, is hard to believe. I will not distinguish between the sarcoptic and psoroptic varieties for the purpose of this discussion.

The conditions under which horses live in war-time are ideal for the spread of mange. These are concentrations of large numbers of animals under unhygienic conditions, where proper grooming is impossible; the debility affecting large numbers of horses in war also helps the disease to gain a hold.

*Treatment.*—The old method of treating mange by applications of sulphur and oil had great disadvantages, as the severity of its effect of the skin and the loss of condition entailed does almost more harm than the disease itself. This is especially the case when horses have no overhead cover and are exposed to the sun. If oily dressings are used, horse fat is the best vehicle for the sulphur, and the dressing should only be left on the skin for twelve hours; it is then washed off with hot water and not re-applied for 24 hours in order to allow the cutaneous function to become restored. The ideal method, if using oily dressings, is the alternate use at short intervals of horse fat and sulphur dressings and hot water baths. The most practical means however, of dealing with mange on a large scale under stationary conditions is by the use of lime-sulphur dips.

The affected animals are dipped two or three times weekly over a period of three to seven weeks, depending on the extent and type of the disease.

The incidence of mange rises in the winter and falls in summer, the principal cause of this being the necessity of leaving animals unclipped, the use of rugs, and the more dirty conditions prevailing in winter, together with debility from the cold. The prevalence of mange in the last war can be judged from the fact that in March, 1917, 3·8 per cent. of the animal strength in France was affected, 16,624 animals being under treatment in veterinary hospitals.

CONTROL

To control the disease in the field, the following procedure should be adopted :—

1. Frequent and regular veterinary and regimental inspection of all animals.

2. Strict isolation of all affected and doubtful cases. (Group animals into—affected—doubtful—free.)

3. Working isolation as far as possible for the apparently healthy animals of a unit, and the prohibition of transfer of animals from infected to healthy units.

4. Disinfection of equipment, standings or buildings, and vacation of the latter.

(*Concluded at foot of Col.* 1, *page* 60.)

# ACETONAEMIA—OBSERVATIONS ON CLINICAL AND NON-CLINICAL CASES*

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Since the report by Sampson, Gonzaga and Hayden[1] in 1933, we have come to realise that acetonaemia had gone undiagnosed as such in many cases prior to that time. Since then it has been recognised rather frequently, especially on account of the ease of application of the Ross modification of Rothera's test for ketone bodies as described by Udall.[2]

The data used in this report were collected from clinical observations on the Purdue University dairy herd. This herd is composed of about 50 cows of the more common breeds. It has been under personal observation since 1929 and from this date until the report by Sampson, Gonzaga and Hayden,[1] as well as up to the past year, there have been very few cases that could have been suspected as being acetonaemia. Indigestion and milk fever have been rather infrequent and the limited number of these cases all responded readily to their respective treatments.

Several of the following cases will illustrate the fact that cows may carry considerable ketone bodies and still show no clinical symptoms. There is reason to believe from some of these cases that this was also true before we used this test for detecting these bodies in the urine.

As mentioned above, the Ross modification of Rothera's test for ketonuria was used in all the following cases. Urine was collected for testing purposes by stimulating the vulva and perineal region. This was done by lightly stroking the parts with the fingers or the butt end of the test tube which was used as the urine container. No quantitative work was done and all tests were made in the stable. In reporting on these tests, the following classification will be used: 1+ (slight reaction, only a faint permanganate colour visible, this degree of reaction is equivalent to the amount of ketone bodies often found in normal urine); 2+ and 3+ (more pronounced and quicker colour change); 4+ (very rapid and intense colour change, impossible to see through the test tube. With many of these a one to ten dilution with distilled water was made and still intense reactions occurred).

Case No. 1.—The first definitely diagnosed case occurred in 1935 in a Holstein. Complete clinical data were not kept on this case; however, it would classify as a non-parturient case in which there was a rather rapid loss of condition, decreased milk flow and anorexia. These symptoms occurred approximately two weeks after parturition. A single intravenous injection of 250 c.c. of 50 per cent. dextrose brought about rather rapid recovery. The Ross test for acetone was 4+. (In all subsequent cases where the word dextrose is used it may be construed as meaning that 250 c.c. of 50 per cent. dextrose was given per vein.)

Case No. 2.—A Guernsey, fresh July 21st, 1938. Anorexia, emaciation and decreased milk flow first appeared August 3rd. Ross test 4+, dextrose in the morning and again in the evening. Symptoms continued and dextrose was given on August 4th. Due to a somewhat slow recovery, she again received dextrose on August 11th. Recovery.

Case No. 3.—Holstein, fresh November 26th, 1938. Retained placenta. (This cow, as well as some others, was on a feeding experiment, which will be mentioned later.) November 28th, placenta removed. Four azamine and boric acid capsules. December 2nd, four more capsules. December 6th, twelve ounces iodine in oil.

It s the practice in this herd in those cases where everything is apparently normal with the exception of the retained placenta, to do nothing for the first 24 to 48 hours, after which an examination is made. The general method of treating cases is to remove the placenta if it comes away with ease; if not, it is allowed to remain and daily examinations are made at which times some type of antiseptic powder is inserted deeply into the uterine cavity: azamine capsules (azamine 5 grammes and boric acid 8 ounces) or charcoal capsules (activated charcoal 8 ounces, sterilac 4 drams, iodoform 4 drams). Often after the placenta has been removed and the cervix contracts, the usual procedure is to inject 8 to 12 ounces of iodine in oil: (mineral oil 1 gallon, iodine crystals 1 dram, potassium iodide 1 dram). This treatment is repeated as often as is thought necessary. Usually one to three treatments at intervals of three or four days is sufficient.

December 9th, urine 4+, dextrose. December 10th, 12 ounces iodine in oil, urine 4+. December 13th, dextrose. December 16th, dextrose, 8 ounces of iodine in oil. Rectal examination revealed good involution of the uterus which was pelvic in position. Between December 8th and 29th, the urine of this cow was tested eleven times on as many days and was an intense 4+ each time. January 10th and 13th, 1939, the reaction was 2+. At no time did this cow show any visible symptoms of acetonaemia.

Case No. 4.—Holstein, fresh February 3rd, 1939. Parturient type. Urine 4+, dextrose. February 5th, urine 4+, dextrose. February 6th, urine 2+, dextrose. Recovery.

Case No. 5.—Holstein, fresh February 6th, 1939. Parturient type. Urine 4+, dextrose. February 9th, urine 2+, dextrose. No further treatment. Recovery.

Case No. 6.—Ayrshire, fresh February 12th, 1939. Symptoms of anorexia, emaciation and diminished milk flow occurred on February 22nd. Urine 4+, dextrose. February 23rd, urine 4+, chloral hydrate. (In future cases whenever chloral is listed it will mean one ounce of choral hydrate and a pint each. of hot water and molasses, given as a drench). February 24th, urine 4+, chloral a.m. and p.m. February 25th, chloral a.m., urine 3+. March 1st, urine 4+. When urine was collected for testing it was noticed that there was slight evidence

*Reproduced from the *Cornell Veterinarian* (October, 1939), **29**. 377-383.

5. Vacation of all affected animals to veterinary hospitals.

6. Disinfection of horse transports and railway trucks used for conveyance of affected horses.

7. The use of lime-sulphur dipping baths for affected horses and in-contacts.

Points of detail to remember are that all animals in the affected stable or unit should be clipped; the hair should be burnt and the machine should be dipped in kerosene after each horse has been clipped. All bedding should be burnt. Straw as bedding should be abolished. Clothing of affected animals should be burnt and that of in-contacts should be disinfected; the same applies to grooming kit. Saddlery and harness should be disinfected.

Many other diseases come under the heading of this paper, such as anthrax, contagious stomatitis, ringworm, variola, specific ophthalmia, rabies, etc., but time does not permit of my dealing with them.

of haematuria. This one time only the amount of dextrose administered was 500 c.c. March 8th. From the 1st to the 8th the physical condition of this cow steadily grew worse. She was destroyed on the 8th and the outstanding lesions found were a severe nephritis and nephrolithiasis.

CASE No. 7.—Holstein, fresh February 15th, 1939. Retained placenta. February 17th, urine 3+, dextrose. Placenta removed, four azamine and boric acid capsules. February 20th, urine 1+, dextrose.

CASE No. 8.—Ayrshire. Fresh March 5th, 1939. On the 10th she was treated for a severe case of foot rot in the right front foot. Anorexia and emaciation developed on the 13th, urine 4+. March 15th, urine 4+, dextrose, chloral. March 16th, urine 4+, chloral a.m. and p.m. March 17th, chloral. March 20th, urine negative. Emaciation marked, otherwise no symptoms, and the general alertness was normal. March 28th, urine 4+, anorexia, emaciation still pronounced. Distinct odour of acetone on the breath. The milk was also positive. March 29th, and 30th, urine 4+, dextrose. April 1st, very constipated, tenesmus, blood-stained mucus exuding from the anus, anorexia and continued emaciation. Urine 4+, milk positive, dextrose. April 3rd, and 4th, urine 4+, dextrose, faeces normal, other symptoms subsiding. April 5th, urine still 4+. Other physical symptoms practically disappeared except that she was quite thin. April 6th, 7th, and 8th, urine 4+, dextrose. Right after these three daily injections of dextrose, the cow started steadily to improve in physical condition and was in quite good shape when turned on a small grass plot for the first time on April 22nd. April 10th, urine 4+. April 11th, urine 3+. Between this date and the 29th, eleven samples of urine were tested on as many days and all ranged between 2+ and 3+.

May 5th, urine 2+. (On February 27th, this cow weighed 1,443 lb. March 16th, eleven days *post-partum*, her weight was 1,131 lb. and she was giving 38 lb. of milk. On April 13th, her weight dropped to 1,000 lb. and milk production was 20 lb.). May 10th, urine negative. May 15th, urine 1+.

June 26th, urine 4+ and July 15th, 3+. On these two dates she was in excellent physical condition and was producing 35 lb. On June 21st she weighed 1,092 lb. July 24th, urine negative.

CASE No. 9.—Ayrshire, fresh April 2nd, 1939. Retained placenta. April 4th, placenta removed, four azamine and boric acid capsules, urine 2+. April 5th, urine negative, two azamine and boric acid capsules.

CASE No. 10.—Holstein, fresh April 9th, 1939. Retained placenta. April 10th, placenta partly removed. Four azamine and boric acid capsules inserted deeply into the uterine cavity. April 11th, placenta apparently all expelled, two azamine and boric acid capsules. April 12th, anorexia, loss of condition, and constipation with considerable blood-stained mucus. Urine 4+, milk showed a slight reaction. Acetone odour was detected on the breath, dextrose. April 13th, urine 4+, dextrose. On March 16th, this cow weighed 1,527 lb. On April 13th, her weight was 1,148 lb. and she was giving 40 lb. of milk. April 14th, urine 3+, severe foot rot, dextrose. April 18th, urine 2+, the milk also was quite positive. April 22nd, urine 1+. At this time the foot rot was well on the way toward recovery. This case showed no further symptoms of any sort and appeared perfectly normal. During one of the regular routine herd tests for ketone bodies (to be discussed later) this cow showed a 4+ urine on June 26th, and to all appearances, one would never consider anything pathological about this cow. July 24th, urine negative.

CASE No. 11.—Ayrshire, fresh June 25th, 1939. Retained placenta. June 27th, placenta partly removed. Four charcoal capsules. June 29th, placenta apparently expelled, four charcoal capsules. Up to July 3rd this cow showed no particular symptoms beyond a still rather poor physical condition. However, on this date haemoglobinuria was noticed for the first time. Acetone 3+, dextrose. (On June 23rd, two days previous to freshening, her weight was 1,100 lb. June 30th, five days *post-partum*, it was 914 lb., July 7th, 718 lb., July 14th, 704 lb., and July 21st, 773 lb.

July 5th, urine 3+, dextrose, haemoglobinuria. July 7th, the haemoglobinuria was so severe that a test for ketone bodies could not be made. July 14th, haemoglobinuria had disappeared, in fact the urine was as clear as water and was negative for ketone bodies. On July 20th, this cow's general condition was materially improved. (From November 21st, 1938, till December 28th, 1938, six urine samples were collected from this cow during routine tests and all were 2+. December 29th, 1+, December 30th, 2+, April 9th, 1939, and 15th, 2+, and April 18th, 1+.)

CASE No. 12.—Jersey, fresh February 25th, 1939. This cow, an exceptionally good individual, was producing 50 lb. of milk and undoubtedly was the most interesting case of all as at no time did she show any visible clinical symptoms of acetonaemia nor did her milk flow decrease. Her physical condition was excellent throughout the period of observation.

On March 15th, her milk was rejected on account of bad odour and flavour. When told of this fact, a urine sample was collected for testing. It was found to be 4+ and the milk was also positive. A strong acetone odour could be detected on the breath. From this date till April 3rd, a period of 20 days, daily samples of urine were collected and all tested between 3+ and 4+. From March 25th to April 15th, she received a pound of molasses daily in her feed. From March 30th till April 3rd, a period of five days, she also received dextrose daily. As an apparent result of this treatment, the urine reaction dropped to 1+ on the 4th. On April 5th, 6th and 7th, it was again up to 4+. On April 6th, she received chloral, twice on April 7th, and once on April 8th. On this date the reaction was again 1+ as well as on the 10th. April 11th to 13th, inclusive, it was negative. On April 14th, 15th and 17th, it was 1+, April 19th, 3+. April 26th and 29th, 2+. On May 3rd, 5th, 6th, 8th, 10th and 15th, it was negative.

## DISCUSSION

A few outstanding points may be discussed in regard to some of the above twelve cases. As previously mentioned, very few of these cases of acetonaemia were encountered in this herd prior to the past year. With the aid of the Ross modification of Rothera's test several very interesting findings were made. From what has been found since this test was used we can be reasonably sure that the same conditions existed before.

A brief notation was made in connection with Case No. 3, that some of the individuals in this herd were on feeding experiments. From an examination of the various rations used and the conditions under which they were fed, there seemed to be no apparent correlation between the different feeds and the occurrence of acetonaemia.

Some dairymen believe that large amounts of soybeans produce an "acid condition." On account of this belief the Dairy Department had been feeding several cows on a ration which contained as much as 50 per cent. soybeans in combination with corn and oats. As a rule with these cows there was less ketonuria than in those where much smaller amounts of soybeans were fed. However, there was a noticeable increase in the amount of ketonuria when the corn was left out of the ration.

Several of these cases verify the fact that ketonuria is rather commonly associated with other conditions such as retained placenta. This was found in Cases Nos. 7, 9 and 10. Cases 7 and 9 showed a moderate amount of reaction. Case 7 was treated with dextrose while No. 9

was not. When this amount of ketonuria occurs, either associated with retained placenta or where it has been expelled soon after calving and no other clinical symptoms are visible, it may not be necessary to use dextrose; however, it is a very good therapeutic measure to apply.

Case No. 11 showed considerable evidence of pain when the bladder was palpated on rectal examination. Cystitis was apparent and no doubt probably contributed to the haemoglobinuria, while with Case 6 the nephritis and nephrolithiasis were the principal factors causing the haematuria and no doubt associated with the ketonuria.

It would be impossible, from observations on other cases, to say whether high soybean feeding or retained placenta, or a combination of both contributed to the excessive ketonuria found in Case No. 3 which continued over such a long period. In addition to silage, alfalfa, salt and mineral, which was fed to all cows, she received a grain ration consisting of fifty parts each of corn and oats and one hundred parts of ground soybeans. One should recall that there were no clinical symptoms of acetonaemia. Case 2 was also on this ration. She had a typical non-parturient type.

The eighth case was included to illustrate that clinical symptoms sometimes recur after treatment and apparent recovery has taken place.

Case 12 was cited to show that strong ketonuria without any evidence of visible clinical symptoms may exist. The daily administration of dextrose over a five-day period lowered this condition only temporarily after which it went up to its former level. Associated with the administration of chloral over a two-day period there was a drop in the ketones of the urine. On the whole, they remained down after treatment as well as when placed on pasture. Daily consumption of a pound of molasses over approximately a period of three weeks did not materially reduce the amount of ketones.

Mention has been made that routine herd tests were conducted for the presence of ketonuria. These tests were started soon after the third case occurred in the above series. Only a limited number of tests were made until about the middle of February when considerable trouble was experienced with bad flavours in the milk which resulted in the rejection of several cans at the creamery. From the middle of February to the middle of April, approximately a sixty-day period, most of the urine samples were collected. Up to and including this period there were 589 samples of urine tested from 55 head. Tests on the above 12 cows were included in this number. From April 15th to the latter part of July only a few scattered samples were tested. During the entire period of testing, there were 31 of the 55 head that gave one or more positive tests for ketone bodies and of this number that showed ketonuria, the only ones manifesting visible clinical symptoms were 4, 5, 6, 8, 10 and 11.

Table I covering the 589 tests, shows the results obtained. The positive group includes 2+, 3+ and 4+ reactors while the suspicious group includes the 1+ cases.

Of the total of 314 tests made before calving, approximately twice as many were negative as positive, while with 275 samples tested after calving almost the opposite was the case. In comparing total positives and negatives there was only a difference of 8 per cent. in favour of negatives. With the above figures one must realise that they are not as significant as they might be as many of these cases were re-tested many times. However, one can be sure that the condition of acetonaemia or ketonuria is much more common in the dairy cow than one would suspect, and that only a certain number of cases will show visible clinical symptoms. As a whole it is only those cases that show visible clinical symptoms that we are particularly interested in, especially from a therapeutic standpoint.

TABLE I

| | Positive | Negative | Suspicious | Total Tests |
|---|---|---|---|---|
| *Before Calving* | | | | |
| No. tested ... | 86 | 186 | 42 | 314 |
| Per cent. of total | 27·3 | 59·2 | 13·3 | |
| *After Calving* | | | | |
| No. tested ... | 155 | 97 | 23 | 275 |
| Per cent. of total | 56·3 | 35·2 | 8·3 | |
| *Total Tests* | | | | |
| No. tested ... | 241 | 283 | 65 | 589 |
| Per cent. of total | 40·9 | 48·0 | 11·0 | |

Acknowledgments

The writer wishes to express his thanks to Professor J. H. Hilton, Professor of Dairy Husbandry, for allowing this work to be carried out on the University herd. Thanks are especially due to Mr. Robert Bratton of the Dairy Department, who so kindly ran the great majority of the urine tests reported in this paper. Dr. L. P. Doyle of the Department of Veterinary Science is also to be thanked for treating the second case and giving a report in order that the proper data could be included.

*References*

[1]Sampson, Jesse., Gonzaga, A. C., and Hayden, C. E. (1933). Ketones of the Blood and Urine of the Cow and Ewe in Health and Disease. *Cornell Vet.* **23**. 184.

[2]Udall, D. H. (1933). *The Practice of Veterinary Medicine.* First Edition, 139.

## DIRECTOR OF COLD STORAGE

The Minister of Food has appointed Mr. E. F. Farrow as Director of Cold Storage. Mr. Farrow was for 20 years general manager of Hay's Wharf. He is an ex-president of the National Federation of Cold Storage and Ice Trades and a vice-president of the British Association of Refrigeration.

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## LEGAL NOTES

*Vixens Disturbed by Road Blasting.*—Finding that the noise and vibration caused by explosives used in road work had caused loss of fox cubs and other injuries to stock during the whelping season, Lord Patrick, in the Court of Session at Edinburgh on January 19th, awarded damages of £1,100 to Western Silver Fox Ranch, Limited, Albion Street, Leeds, who had sued the county council of Ross and Cromarty for £15,000.

The defenders maintained that no liability attached to them for losses suffered at the ranch at Alnes, Ross-shire, as they were fulfilling statutory duties in blasting for a new bridge and road approach.

Lord Patrick said there was no doubt that a strong protest had been made against blasting taking place during the breeding season, when silver fox vixens were highly nervous. If disturbed many of them aborted or ate their cubs if they had a litter. On one occasion when blasting took place the vixens were greatly excited; many of them rushed about, some carrying cubs in their mouths and a number of the vixens destroyed their litters. There was no great urgency in the interests of public safety for completing the new bridge and roadway at that time.

THE VETERINARY RECORD
JANUARY 27TH, 1940.

# CHEMICAL WARFARE

IN April, 1915, the Germans launched their first gas attack in the Great War and thus introduced the chemical arm as a practical weapon in modern warfare. From then until 1917 the lung-irritant gases—chlorine, phosgene, diphosgene, and chloropicrin, either alone or mixed—were used, together with the harassing persistent lachrymatory gas xylyl bromide. Every new offensive weapon evokes a defensive response and so with the development of the use of these gases came the respirator. At first this consisted of a two-way breathing bag of impregnated flannelette but by 1917 the dry filter box respirator with valves was introduced which gave complete protection against all the above gases. To end this chemical stalemate the Germans introduced simultaneously diphenylchlorasine, a sensory irritant that penetrated the respirator then in use, and mustard gas that attacked the skin either as a liquid or in the form of vapour. Again defence was improved to meet the new conditions and protection against the sensory irritant smokes was afforded in the respirator. Mustard gas remained the most powerful harassing agent until the end of the War.

What have been the developments of the chemical arm since the Great War? The expansion of the air forces of the Great Powers has fundamentally altered the tactical employment of gas. Now the lines of communication, bases, sea ports, and special objectives on the home front are all liable to attack from the air. Modern aircraft can carry gas-filled bombs and spraying apparatus. Whether they will in fact do so instead of their high explosive and incendiary weapons remains to be seen. It may be significant that gas, with one notable exception, has not been used since the Great War. Italy used it with decisive effect in Abyssinia but the Ethiopian had no defence. Can it be that defence has kept pace with offence?

Undoubtedly the search for new war gases has been going on but very few substances fulfil the essential requirements. They must possess powerful physio-pathological properties and these must be correlated to their physical properties. Thus at 20 deg. C. the vapour pressure of mustard gas is 0·115, whilst that of phosgene is 1173·4. The lung-irritant gas must have a high vapour pressure at ordinary temperatures to supply enough gas to the atmosphere to produce harmful effects. Substances with a low boiling point are necessary when a high gas concentration is required for a short time; those with a high boiling point are used when prolonged action is desired (persistence). The relation between boiling point and volatility may be seen in the following table: —

| B.P. at 760 mm. °C | Volatility at 20° C. mg./m.$^3$ |
|---|---|
| 220 | 630 |
| 110 | 100,000 |

(At 760 mm. Hg. mustard gas boils at 217° C and phosgene at 8·2° C.)

In addition to the foregoing requirements, war gases must be stable to atmospheric and chemical change; they must not deteriorate on storage nor attack metal. Raw material must be available and the manufacturing process relatively simple. The chances of finding a new war gas would therefore appear to be remote.

Will Germany use the chemical arm against us in view of our defensive measures? She has lost the advantage of surprise she had in 1915. Nevertheless it may be the intention to use gas to demoralise and harass the population after large-scale air attacks. Defence against gas therefore becomes an intrinsic part of A.R.P. and although our animals will be mainly incidental victims it behoves the profession to prepare itself to meet the situation should it arise.

## CLINICAL COMMUNICATION

# SCROTAL HERNIA IN A FOAL

G. P. MALE
READING

A Shire foal, about five months old, through slipping into a ditch, suddenly developed a large scrotal hernia. This resulted in a good deal of pain and a rise in temperature varying between 104° and 105·5°. The swelling was about the size of a child's head and a good deal of oedema with thickening of the skin was present. It was impossible to reduce the hernia so it was decided to operate, but owing to a persistent high temperature and other constitutional symptoms this was not possible until about three weeks afterwards.

After anaesthetising the foal and placing it in a dorsal position, an incision was made through the thickened skin when a quantity of yellow fibrinous exudate was encountered and below this the large hernial sac which was adhering strongly to the skin. It required about 40 minutes of strenuous work to break down these adhesions and it was impossible to say from manipulation what the sac contained—whether bowel, testicle or omentum or all three structures, and even when an incision was made the position was not much clarified until the base of the sac was reached when there was evidence of a spermatic cord. It was difficult to find the testicle which was firmly embedded in the tissues. Owing to its size, a short clamp was insufficient to enclose the sac ; a long aluminium one with screws at each end was therefore applied as close to the inguinal ring as possible. The sac and testicle were then excised about two inches from the clamp, antiseptic dressings applied, and the patient was allowed to sleep. He got up about two hours later, was put back with his dam and immediately started to suck.

The wound was dressed twice daily and the screws gradually tightened until the clamp came off on the third day. An uneventful recovery took place, the foal leaving the hospital a week after the operation, by which time there was not much swelling and the wound was healing quickly.

The hernial sac and small testicle weighed 1 lb. 8 ozs. and were exhibited to the Members of the Royal Counties Veterinary Medical Association at the Reading meeting.

## ABSTRACTS

[**COMPARATIVE PATHOLOGY OF THYMIC TUMOURS: ITS HISTOGENETIC INTEREST.** (Trans. title.) Blanchard, L., Poisson, J., and Drieux, H. (1939.) *Rec. Méd. vét.* **15**. 129-153. (15 figures).]

Here is a description of ten mediastinal tumours diagnosed as of thymic origin. Three from horses were carcinomatous and a fourth lymphosarcomatous. Others with a lymphosarcomatous appearance were found in a young pig, a sheep and a young calf. That in a dog was of purely epithelial type, while two growths from rabbits showed a complex, polymorphous structure.

The criteria for assuming a thymic derivation were chiefly the close association of epithelial reticular cells and (lymphocytic) thymocytes or the presence of Hassall's corpuscles, microscopic epithelial cysts or " cellules myoides."

The authors belong to the minority that regards the thymocytes not as lymphocytes that have migrated from the blood-vessels, but as offshoots from the epithelial reticulum cells, and they find a complete series of intermediate forms between them. They describe too, " epithelio-mesenchymal metaplasia," in which they see progressive transitions between fusiform epithelial elements and fibroblasts of the stroma.

J. W. W.

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[**EFFECT OF VITAMIN A DEFICIENCY ON THE RATE OF APPOSITION OF DENTINE.** Schour, I., Smith, M. C., and Hoffman, M. M. *Proc. Soc. Exp. Biol. Med. N.Y.* **39**. 447-450. (1 tab. 1 fig. 2 refs.).]

Rats on a vitamin A-deficient diet received two injections of 0·5 c.c. of 2 per cent. alizarine red solution. The alizarine is deposited in the dentine at the time of each injection, and thus forms a means of estimation of the daily rate of dentine apposition.

Disturbances in the rate of appositional growth appear 9 to 19 days after deficiency begins. Sub-optimal replacement therapy of four days' duration had no beneficial effect, but full replacement therapy had an immediate effect, and caused normal replacement to be resumed in one to five days.

D. D. O.

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[**THE TREATMENT OF SOME PARASITIC SKIN DISEASES OF DOGS.** (Trans. title.) Blind, K. (1938.) *Tierärztl. Rdsch.* **44**. 403-406.]

Blind obtained very good results in the treatment of six cases of demodectic mange and two cases of ringworm (one Trichophyton and one Achorion) in dogs by a preparation called " Linimentum sulfuris colloidalis compositum." It contains colloidal sulphur, balsam of Peru and salicylic acid, in a vehicle having good penetrative properties.

It is applied as usual for liniments and repeatedly if necessary.

J. E.

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[**DISTRIBUTION OF GLYCOGEN IN THE DOG'S HEART.** Boyle, R. W., McDonald, C. H. (1939.) *Proc. Soc. Exp. Biol. Med. N.Y.* **39**. 14-15. (1 tab. 1 ref.).]

Normal dogs were anaesthetised by intravenous sodium phenobarbitol. The chest was opened quickly and the heart removed and divided into the atria, ventricles, and septum. A piece of each part was excised and weighed in a hydrolysing tube, and hydrolysis was then performed by Pflüger's method.

It was found that there is little in the comparative glycogen content of the different parts of the heart, although in general the left atrium and right ventricle show slightly higher percentages than the other parts.

D. D. O.

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[**STRUCTURAL CHANGES IN THE PARATHYROIDS IN VITAMIN D DEFICIENCY.** Pal, R. K. *Ind. Med. Gazette.* **72**. 10. (5 figs.).]

Observations on the parathyroid glands of animals maintained on a vitamin-deficient diet showed that in vitamin A and B deficiency there is some degeneration of a colloidal nature and increase in number of the acidophil cells. In vitamin C deficiency some disintegration with haemorrhagic patches occurs. Vitamin D deficiency results in hypersecretion of the principal epithelial cells. Vitamins A, B and C, therefore, play an important rôle in maintaining the health of the secreting cells of the parathyroids; abundance of vitamin D gives rise to a resting phase, and a deficiency of it results in the principal cells becoming hyperactive.

D. D. O.

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[**PRODUCTION OF CIRRHOSIS IN FATTY LIVERS WITH ALCOHOL.** Connor, C. L., Chaikoff, I. L. (1939.) *Proc. Soc. Exp. Biol. Med. N.Y.* **39**. 356-359. (2 plates).]

In the present study cirrhosis in normal dogs is shown to occur when the feeding of alcohol is superimposed on a previously established fatty liver.

A number of dogs were fed on 10 grammes lard and 7 grammes lean meat per kilo. for 30 to 35 days. At the end of the period 10 c.c. of 22·5 per cent. alcohol per kilo. was administered twice daily, and the diet was changed to 30 grammes of lean meat. Alcohol feeding was alternated with a similar period of fat feeding every four to seven days. The dogs died or were slaughtered after varying intervals.

Excessively fatty livers were present in all animals. They resembled those found in chronic alcoholism in man. A number were greenish in colour, and showed interhepatic obstruction. Microscopically atrophy, hyaline degeneration, and early cirrhosis were noted.

D. D. O.

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[**AN EXTENSION TO THE KNOWN LONGEVITY OF GAPEWORM INFECTION IN EARTHWORMS AND SNAILS.** Taylor, E. L. (1938.) *Vet. J.* **94**. 327.]

The maximum known period of life of *Syngamus* in earthworms previously shown by Taylor to be three and a half years is, in the present paper, extended to four years four and a half months. It is also shown

## REVIEW

**THE CLINICAL AND EXPERIMENTAL USE OF SULPHANILAMIDE, SULPHAPYRIDINE AND ALLIED COMPOUNDS.** Long, Perrin, H. (M.D., Associate Professor of Medicine, The School of Medicine, Johns Hopkins University, and Bliss, Eleanor, A. (Sc.D., Fellow in Medicine, The School of Medicine, Johns Hopkins University) (1939). pp. 319 (957 refs.). Index of Authors. Macmillan and Co., New York. ($3.50 (15s. 6d.)]

This publication is an extremely useful contribution to the literature on the subject of sulphanilamide and sulphapyridine. Throughout the book, opinions expressed by other authors are carefully considered, the authors' experiences given in balanced terms and a reasonable conclusion is drawn from the knowledge thus presented. To any member of the veterinary profession who wishes intelligently to study the use of these compounds in the treatment of animal disease, this book provides a source of reliable information presented in a form that is both clear and concise.

The subject matter is introduced by a chapter on the historical aspects of sulphanilamide therapy, and as the authors say, the story of the development of this form of therapy is absorbing.

Then follows a chapter on the Chemotherapy of Experimental Infections. In this chapter there is discussed not only the experimental work on general bacterial infections but also the work on specific virus infections such as distemper virus. Under the heading of Distemper Virus Infections the work of Montgomerie and MacIntyre receives careful attention.

The experimental toxicity and comparative pharmacology of these compounds form the subject of a thorough analysis. As might be expected the mode of action of these drugs calls for extended discussion which is summarised in the sentence: "So far, then, no theory has been evolved which adequately explains the mode of action of these sulphur benzene derivatives, and for the time being, one must be content with the simple conception that they inhibit the growth of susceptible micro-organisms in the body and in the test tube."

The authors then turn to the clinical use of sulphanilamide. After discussing general considerations, they briefly review the auxiliary treatment of patients receiving sulphanilamide, then detailed consideration is given to the clinical use of the drug in specific conditions. Infections in animals are dealt with very briefly; no conclusion is drawn as to the value of the drug in bovine mastitis. Similarly the clinical use of sulphapyridine, sulphanilyl sulphanilamide and benzyl-sulphanilamide is described, and also that of protonsil and neo-prontosil.

The concluding chapter is devoted to the clinical toxic manifestations of sulphanilamide and its derivatives.

On the inside of the cover of the volume are given the chemical formulae, medical designations and common trade names of sulphanilamide and certain related compounds. These will be of great assistance to readers who have become confused as to the identity of various compounds following the perusal of trade literature on the subject.

The phraseology of the book is such that reading is a pleasure and a good index combined with the careful layout of the subject matter make reference to particular points of detail a simple matter. The authors are to be congratulated on the successful production of such a useful volume.

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that snails are able to carry the infection for 13½ months and it is suggested that this is nowhere near the end-point which may coincide with the longevity of the snail.

According to Boycott, *Helix aspera* lives for five to six years and common earthworms are reported to live up to ten years. *Syngamus* is, therefore, well able to withstand a prolonged period of absence of suitable secondary hosts.

J. S. S.

## N.V.M.A. DIVISIONAL REPORT

### ROYAL COUNTIES V.M.A.*

### MEETING AT READING

An ordinary general meeting of the Royal Counties Veterinary Medical Association was held at the Caversham Bridge Hotel, Reading, on Friday, November 24th, 1939.

The President, Colonel P. J. Simpson, occupied the Chair, and the following members were present: Messrs. N. S. Barron, H. Bell, J. Bell, Esmond Brown, B. G. Catmur, R. M. Davidson, S. J. Edwards, A. C. Fraser, Lieut.-Colonel H. Greenfield, Major R. C. G. Hancock, Captains J. R. Hewer, T. M. C. Hunt, W. L. Little, Messrs. G. P. Male, N. P. Male, W. Martin, and R. A. Willett. Mrs. G. M. Stuckey, Messrs. P. R. Temple, R. E. Ticehurst, and Dr. W. R. Wooldridge attended as visitors.

The minutes of the previous meeting, having been published in the *Veterinary Record*, were taken as read, and signed accordingly.

Apologies for absence were received from Messrs. L. G. Anderson, A. J. Baxter, J. R. Baxter, J. Bell, Professor J. B. Buxton, Mr. H. B. Collet, Major G. W. Dunkin, Major W. H. Kirk, Messrs. J. McKerlie, E. S. Paterson, W. Stobo, J. F. D. Tutt, and Colonel G. K. Walker.

*Nominations for Election to Membership.*—Mrs. G. M. Stuckey, M.R.C.V.S., of Maidenhead (proposed by Mr. N. P. Male; seconded by Mr. G. P. Male).

*Election to Membership.*—Mr. R. R. Bugg, M.R.C.V.S., Aylesbury (proposed by Mr. G. Anderson; seconded by Mr. W. Stobo).

*Nomination for Election to Hon. Associateship.*—The President nominated Mr. Tom Lepper for election to Honorary Associateship. This nomination was received with acclamation.

Election of Officers for the Year 1940

*President.*—Captain W. L. Little.†

*Vice-Presidents.*—Messrs. J. Bell, N. S. Barron, E. J. Heather and Lieut.-Colonel P. J. Simpson.

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* Received for publication January 9th, 1940.

†We recorded in a recent issue, with deep regret, the death of the newly-elected President in a motor accident early this year.—*Editor.*

*Council.*—Messrs. J. R. Baxter, B. G. Catmur, Majors A. C. Duncan, G. W. Dunkin, Dr. A. C. Fraser, Messrs. G. P. Male and H. C. Shingler.

*Hon. Treasurer.*—Major R. C. G. Hancock.

*Hon. Secretary.*—Mr. H. Bell.

*Hon. Auditor.*—Mr. J. Willett.

*Trustees.*—Mr. R. A. Willett, Captain W. L. Little and Major F. J. Taylor, T.D.

*Election of Representative on Council of the Victoria Veterinary Benevolent Fund.*—Major G. W. Dunkin was unanimously re-elected.

*Victoria Veterinary Benevolent Fund.*—The President, at this juncture, made an appeal on behalf of the V.V.B.F. He said that the Fund had found it impossible to meet the demands for help which had been made upon it and many deserving cases had had to be turned away because the money was not there to contribute relief.

This state of affairs existed in spite of the very considerable assistance which the Fund had received as a result of the efforts of the Ladies' Guild. The President made an earnest appeal to members to become Annual Subscribers.

### Discussion on National A.R.P. (Animals) Committee

In discussing N.A.R.P.A.C. the Association was fortunate in having Dr. Wooldridge to tell what had been done so far in organising centres and posts for dealing with animals which might be injured in air raids.

Dr. W. R. Wooldridge then addressed the meeting. He had with him for inspection some of the equipment which, it was hoped, would be made available for N.A.R.P.A.C. helpers. He also showed armlets and notices for use about centres. After Dr. Wooldridge had finished his dissertation many members had questions to ask—many of them with regard to gas-proof rooms. Dr. Wooldridge said that measures for dealing with gassed animals had received more attention in the case of centres situated in thickly populated areas than was thought necessary in rural areas.

Mr. G. P. Male, as County Veterinary Officer (Berkshire), gave a brief summary of the organisation which it was proposed to adopt amongst those willing to participate in the scheme throughout the county.

Mr. N. P. Male described the unit which he had organised in the Borough of Reading, giving details of personnel and equipment.

On the proposition of Major R. C. G. Hancock it was decided to send a letter to the N.V.M.A. intimating that the scheme had been discussed and that the members of the " Royal Counties " were in sympathy with its aims and were willing to participate.

*Exhibits.*—Mr. G. P. Male presented an unusual specimen (hernial sac and testicle) which is described elsewhere in this issue.

Mr. N. S. Barron exhibited the carcase of a fowl in which could be clearly seen lesions in the nerve trunks associated with fowl paralysis.

The President thanked both these members for bringing forward such interesting specimens.

*Place of Next Meeting.*—It was decided to hold the Annual General Meeting at Reading.

The President expressed the opinion that it was very desirable that the members should meet despite the fact that the country was at war. Even though papers were not presented there were many important topics to be discussed.

*Any other Business.*—Under this heading Lieut.-Colonel H. Greenfield rose to call attention to a grievance. The meeting went into committee to discuss the matter.

On the resumption of open meeting it was decided that a sub-committee composed of the President (Lieut.-Colonel P. J. Simpson), the Hon. Treasurer (Major Hancock) and the Hon. Secretary (Mr. H. Bell) be appointed to enquire into the matter and report back to Council.

The proceedings closed with a hearty vote of thanks to the President for so ably conducting the business of the meeting.

H. Bell, *Hon. Secretary.*

## IN PARLIAMENT

### Scientific Talent Mobilised

Replying to questions asked by Lord Strabolgi in the House of Lords on Thursday of last week, Lord Chatfield told the House that the vital importance of scientific research to war was and had been fully realised and that the country's scientific talent had been mobilised to that end. Joint committees of the fighting Services considered many scientific subjects which were of common interest and inventions were brought under expert eyes with the least possible delay. The Government had rejected, however, a proposal to set up a central body since in their view that would be likely rather to impede than to expedite progress. Apart from inter-Service contacts there were scientific and technical committees which covered every kind of research work. Their work, Lord Chatfield said, must necessarily be secret, but he was able to give the assurance that, so far, any surprise or partial surprise disclosed in the struggle had been rapidly met by our present methods. He also indicated the scope of the mutual exchange of scientific knowledge which had taken place between the British and French Governments before the war, and said that the question of extending the present liaison was being discussed.

Lord Chatfield added that measures were to be taken to reward and protect those persons whose inventions the Government had accepted. Finally, he said that the organisation of science in relation to war was adequate to our purposes so far as these could now be foreseen.

. . . . .

The following are among the questions and answers recorded in the House of Commons recently:—

### Animal Feeding Stuffs

Mr. De la Bere asked the Minister of Agriculture whether he can now make some statement of the Government's intentions regarding schemes for the rationing of animals' foodstuffs?

Sir R. Dorman-Smith: The examination of various proposals for the rationing of animal feeding stuffs is still proceeding, but I am not yet in a position to make a statement of the Government's intentions in this matter.

Mr. De la Bere: Is my right hon. Friend aware that this matter is an absolute disgrace, that poultry farmers and pig farmers are unable to keep their stocks, and that something must be done for them? Day after day I keep at this and nothing is done.

Mrs. Tate: In view of the tremendous slaughtering of poultry and pigs which is now taking place, can the right hon. Gentleman give us an assurance that, until we can have animal rationing, there shall be some control of slaughtering county by county, so as not to have a complete slaughtering now and a complete dearth later on?

Sir R. Dorman-Smith: The hon. Lady should not exaggerate the situation. So far as the other question is concerned, if the hon. Member himself will really sit down and examine this problem, he will realise how complex it is, and then I do not think that he will be quite so vehement.

Viscountess Astor asked the Minister of Agriculture whether, in view of the shortage of barley for animal feeding he will ration the amount of barley for breweries?

The Chancellor of the Duchy of Lancaster (Mr. W. S. Morrison): I have been asked to reply. The matter is under discussion with representatives of the brewing industry and I am not yet in a position to make a statement.

Viscountess Astor: Might I ask the Prime Minister, who has said he does not care what unpopular thing he does in order to win the war, whether he will do another unpopular thing and have a good supply of food instead of a good supply of drink?

Mr. W. Roberts asked the Minister of Agriculture what arrangements he proposes to make to ensure that existing supplies of animal feeding-stuffs are equitably distributed to farmers, and are used for the maintenance of those classes of live stock to which he wishes to give preference?

Sir R. Dorman-Smith: Available supplies of imported feeding stuffs are being allocated to distributors in proportion to their pre-war trade and they have been asked to distribute them to their farmer customers as equitably as possible. The statement of Government policy with regard to live stock and feeding stuffs issued on November 22nd—a copy of which I am sending to the hon. Member—was communicated to the distributive trade by the Ministry of Food and they were asked to follow the principles enunciated in that announcement in the distribution of the limited supplies available to them. I am advised that this request has been generally observed. Further proposals are under consideration with a view to improving the efficiency of the machinery of distribution and, in particular, to overcome the difficulties caused by diversion of cargoes.

Mr. Roberts: Does not the Minister think that farmers who have dealt with several merchants for their feeding stuffs have a great advantage without any rationing scheme, as they are able to get a certain amount from each firm with which they are dealing? Is he not aware of the great injustice there is in the supply of feeding stuffs to individual farmers, an injustice which cannot be met without some scheme of rationing?

Sir R. Dorman-Smith: Obviously we cannot get complete equality without some scheme of rationing.

Viscountess Astor: Should not some system have been brought in a long time ago?

## Poultry Industry (Foodstuffs)

Sir Adrian Baillie asked the Minister of Agriculture whether he can now make any further statement on the provision of foodstuffs for poultry keepers and pig producers; and what percentage of normal crops it is intended such producers shall receive?

Sir William Wayland asked the Minister of Agriculture whether he can now give any definite information as to what the poultry industry may hope to obtain in the matter of feeding-stuffs up to the end of April next?

Mr. T. Williams asked the Minister of Agriculture what steps have been taken to ensure that specialist poultry-keepers are receiving a fair share of available supplies of feeding-stuffs?

Mr. Glenvil Hall asked the Minister of Agriculture whether he is aware of the widespread shortage of feeding-stuffs for poultry; and what steps he proposes to take to remedy the situation, which is causing ruin among poultry farmers?

Sir R. Dorman-Smith: The Government announced on November 22nd that in view of the primary importance of maintaining milk and meat supplies and of the value of cattle and sheep in preserving the fertility of the soil, the economies in imported feeding stuffs necessitated by the demands on our shipping for essential war materials would have to be secured in the main by a reduction in the supplies of feeding-stuffs available for the pig and poultry industries. I am well aware that in the period of shortage through which we have passed these industries—especially those producers who grow little or none of their feeding-stuff requirements—have suffered very considerable hardship. I am happy to say that there is a material improvement in the supply position which is likely to be maintained during the next two or three months. Every effort is being made by the Government to ensure equitable distribution of the available supplies throughout the country, notwithstanding the difficulties arising from diversion of cargoes, and in particular arrangements are being made which will enable special consideration to be given to cases where acute shortage might result in the reduction of foundation poultry breeding stock. Some hardship, I am afraid, is inevitable, but every possible effort is being made to mitigate it.

Mr. T. Williams: May I suggest that as there are so many thousands of ex-Service specialist poultry dealers in this country, unless the Ministry are prepared to take steps to ensure that they receive a fair share of available supplies arable farmers will produce some of their own feeding-stuffs and leave the specialist poultry dealers without feeding stocks at all?

Sir R. Dorman-Smith: We are taking all possible steps regarding the allocation of supplies and everything is being done to see that they get a fair crack of the whip in accordance with the Government's policy.

Lieut.-Colonel Heneage: Is it true that preference in the matter of supplies is being given to members of the accredited poultry-breeding scheme while reputable breeders who are not members of the scheme do not rceive this favourable treatment?

Sir R. Dorman-Smith: A request was made to the chairman of the county feeding-stuffs committee and the Ministry of Food that they should do all practicable to ensure that there are supplies of food for poultry stuffs, and their attention was drawn to the accredited scheme since members participating in that scheme were only breeders. The arrangements I have indicated in my reply as regards cases of shortage will apply generally to breeders of sound foundation stock and will not be limited to accredited breeders.

Sir W. Wayland: What percentage of reduction does the Minister consider will be necessary in regard to poultry producers during the next two or three months? That will give some indication as to the number of birds they will be able to feed.

Sir R. Dorman-Smith: It is impossible to give an accurate estimate because of certain things that might happen at sea. It might be very misleading to try and give a more definite figure than I gave in my statement.

Sir T. Moore: How are poultry keepers to know what birds to keep alive? That is the position to-day.

## Grassland Ploughing

Sir T. Moore asked the Minister of Agriculture whether, taking the latest available date, he can now state the number of ploughed-up acres which have qualified for receipt of the Government subsidy in Scotland and England, respectively?

Sir R. Dorman-Smith: Applications for the grant of £2 per acre for ploughing up of seven-year grassland covering approximately 850,000 acres in England and Wales, and 230,000 acres in Scotland, have been received. Applications continue to be received in substantial numbers. Generally speaking, the grant is not payable until the County War Executive Committee has certified that the lands have been ploughed up and that the other conditions attaching to the grant have been complied with. The county committees are now actively engaged in inspecting the lands in respect of which the grant applications have been made, but it is not yet possible to give the information which my hon. and gallant Friend desires.

### Fat Cows (Slaughter)

Colonel Baldwin-Webb asked the Minister of Agriculture whether he is aware of the recent slaughter in the United Kingdom of many cows which would be due to calve in April, May or June; and what steps he proposes to take to stop this practice?

Sir R. Dorman-Smith: I am aware that, owing to the increased demand for home produced meat of all descriptions, there has been an increase in the sales of fat cows for slaughter, but I have no information as to the numbers of such animals that were in calf. The Ministry of Food is now the sole purchaser of all fat beasts for slaughter at fixed prices, and the certifying authorities at collecting centres have been instructed by that Department not to purchase any animal which in their opinion is pregnant, unless they are satisfied that the condition of the animal is such that slaughter is necessary.

# NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

### Diary of Events

Jan. 29th.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 4 p.m.
Feb. 1st.—Meeting of the Central Veterinary Society at the Royal Veterinary College, N.W.1, 2.30 p.m.
Feb. 8th.—Annual General Meeting of the Lincolnshire and District Division, N.V.M.A., at Grantham, 2 p.m.
Feb. 29th.—Voting Papers issued to overseas members (R.C.V.S. Council Election).
Mar. 18th.—R.C.V.S. Examinations at Reading.
April 1st.—R.C.V.S. Annual Fees due.
May 9th.—Last date for nominations, R.C.V.S. Council Election.
May 14th.—Provisional date for commencement of R.C.V.S. Animal Management Examination.
May 23rd.—Issue of R.C.V.S. Annual Report and Voting Papers.
May 30th.—Last date for receipt of R.C.V.S. Council Election Voting Papers.
June 6th.—**R.C.V.S. Annual General Meeting.** Victoria Veterinary Benevolent Fund Annual General Meeting.
June 27th.—R.C.V.S. Written Examinations begin.
July 3rd.—Provisional date for commencement of R.C.V.S. Oral and Practical Examinations.

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## PERSONAL

### Retirement of Captain W. G. Wragg, M.R.C.V.S.

#### Appointment of Mr. H. Gooch, M.R.C.V.S., as Chief Superintending Inspector, Ministry of Agriculture and Fisheries

We learn that Captain William George Wragg, M.R.C.V.S., Chief Superintending Inspector, Animal Health Division, Ministry of Agriculture and Fisheries, will retire at the end of February, 1940, having attained the age limit, after 37 years' service.

Captain Wragg was educated at King's College, Wimbledon, and graduated at the Royal Veterinary College, London, in 1902. In the same year he joined the Board of Agriculture as Veterinary Inspector, and after a period of 4½ years on duties in the field was selected for duty at the Ministry's Veterinary Laboratory of which he was officer-in-charge for 20 years under the late Sir Stewart Stockman, Chief Veterinary Officer and Director of Veterinary Research, except for the period 1914 to 1918 when he was released for military service (Captain, R.A.V.C.). It is interesting to note that Captain Wragg was the first veterinary surgeon to be appointed to an official research position under the designation of "Assistant in Veterinary Research." In 1927 he was appointed as Chief Superintending Inspector and among his many duties has been responsible for the inspectorate staff, both whole- and part-time, of the Division, earning the sincere and deep respect of all its members.

Captain Wragg was Secretary of the Foot-and-Mouth Disease Committee and visited India, where this Committee's investigations were undertaken; he was also a joint Secretary of the present Foot-and Mouth Disease Research Committee and in charge of the investigations at the Ministry's Veterinary Laboratory and the Experimental Station, Pirbright, until February 1st, 1927, relinquishing the appointment on promotion. The Committee recorded that it was particularly indebted to him, as his professional knowledge and adminstrative experience had been of the greatest service to the enquiry. He has represented Great Britain at meetings of the International Veterinary Bureau (Office International des Epizooties), Paris, and at technical conferences called by a Committee of the League of Nations at Geneva.

#### *Services to the National Veterinary Medical Association.*

Captain Wragg has, for many years, been a very keen supporter of the N.V.M.A., and his conspicuous services to our Association will be familiar to all our readers. A prominent member of the Association of Veterinary Inspectors, he was soon elected to represent that body on the Council of the "National." His administrative ability and grasp of financial affairs were early recognised, and on the retirement, owing to ill health, of Mr. E. Alfred West from the Hon. Treasurership of the Association, in 1930, the Annual Meeting enthusiastically elected him to that onerous and responsible post. Captain Wragg, during his period of office as Hon. Treasurer, which extended to 1938, shepherded the Association's finances assiduously and did much to augment the reserve fund which was so deeply the concern of his capable predecessor. At the Glasgow Annual Meeting of that year, the President, Mr. Donald Campbell, in reluctantly announcing Captain Wragg's decision to relinquish his important office, voiced the feelings of all the members in the words, "He has been a trusted and honoured servant of the Association for many years." In connection with the President's further observation, that "he has been a conspicuous figure at every Congress," we may add that Mrs. Wragg and their daughter have also been consistent supporters of this feature of the Association's activities—also of those of the Ladies' Guild. It was very much regretted that a few years ago he was unable to accept the honour of nomination as President of the Association owing to his official position with the Minstry.

All his colleagues and his many friends in his profession will hope that Captain Wragg will have a long and happy retirement.

#### Mr. Henry Gooch, M.R.C.V.S.

Mr. Henry Gooch, M.R.C.V.S., who succeeds Captain Wragg as Chief Superintending Inspector, graduated from the Royal Veterinary College, London, in July, 1908.

He is a member of a well-known family of veterinary surgeons of East Anglia, his father being the late Mr. J. K. Gooch, M.R.C.V.S., of Holt, Norfolk, while he is related to Major Frederick Leeds Gooch, J.P., F.R.C.V.S., of Stamford, Lincs.

Joining the Ministry's staff in 1910 (Inspector, 1913), Mr. Henry Gooch, after a short period of service in the field, was posted to the Ministry's laboratory. Resuming field service in 1925 as a Divisional Inspector, he was promoted Superintending Inspector in 1932, in charge of certain of the South-Eastern counties.

Mr. Gooch, who at one period represented the Association of Veterinary Inspectors on the Council of the National Veterinary Medical Association, takes up his duties as Chief Superintending Inspector on the 27th of next month.

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### Supplementary Supplies of Petroleum for Veterinary Surgeons

Following are the replies, further to those inserted in our last issue, received to date in response to the invitation addressed to each Liaison Officer to acquaint the General Secretary, N.V.M.A., with such instructions in regard to the submission of applications for supplementary supplies of petrol as he wishes to be included in the list to be published for the guidance of members.

*North-Western Division* (Mr. J. Holroyd, F.R.C.V.S., D.V.S.M., Blackburn—supplementary communication): "Application forms to be filled up in duplicate, returned to me by a specified date along with the Registration Book after having first obtained basic ration, and of course separate forms for each car."

*South-West Scotland Area* (Mr. Alex. Thomson, M.R.C.V.S., Glasgow): "Applications should be addressed to me, as this makes for smoothness. I wish members would fill in the particulars asked for on the form, correctly: it is troublesome when they omit to get the basic ration books before sending me their application."

*Southern Division* (Mr. G. P. Male, M.R.C.V.S.): "The first paragraph of the notice *re* this Division in your last issue was incorrectly reproduced. This should have read: 'I would be glad if those members of the veterinary profession communicating with *the Divisional Petroleum Officer* would always give the Divisional Reference No., and write "Veterinary Surgeon" on the envelope. This would prevent delays and considerably facilitate the work of his office.'"

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### Equipment for N.A.R.P.A.C. Veterinary Officers

Veterinary surgeons acting as officers of the National Air Raid Precautions (Animals) Committee will, from time to time, be receiving equipment from various sources upon the orders of N.A.R.P.A.C. headquarters. The equipment comprises first-aid boxes for large animals, ditto for small animals, stirrup pumps, bleaching powder in tins of convenient size, light anti-gas clothing, helmets, dog graspers, coil of rope (60 feet length), civilian duty respirators, etc., and may be received by veterinary surgeons without forward advice. This note is inserted to ensure that the articles will be retained and not be returned to the manufacturers. A post card, addressed to the Chief Executive Officer, acknowledging the receipt of such equipment, would be appreciated at headquarters.

We are asked to point out, however, that the issue of this equipment is being seriously handicapped by the slow return of the requisition forms for first-aid boxes, etc., which have been issued to every veterinary surgeon associated with N.A.R.P.A.C. Any who, inadvertently, have not received the form would assist headquarters if they would send a post card stating the numbers of (1) first-aid boxes for large animals, (2) first-aid boxes for small animals, (3) dog graspers, they require. Veterinary officers are also asked to state on this form the approximate number of personnel assisting at the first-aid posts.

## R.C.V.S. OBITUARY

### Death of Mr. J. Ewing Johnston, M.B.E., J.P., M.R.C.V.S.

We learn with deep regret of the death of Mr. J. Ewing Johnston, M.B.E., J.P., M.R.C.V.S., a well-known North of Ireland veterinarian and a former Vice-President of the National Veterinary Medical Association. We hope to insert a memoir of Mr. Ewing Johnston—who was 70 years of age and who passed away suddenly on Sunday last at his home, Knockleigha, Shaw's Bridge, Belfast—in our next issue.

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Fairclough. James, 21, Old Hall Street, Kersley, Farnworth, Nr. Bolton, Lancashire. Graduated N. Edinburgh, June 1st, 1899. Died January 18th, 1940, aged 76 years.

Paley, Albert Edward, 116, Station Road, Wylde Green, Sutton Coldfield. Graduated Edinburgh, January 13th, 1887. Died January 8th, 1940; aged 76 years.

A native of West Hartlepool, Mr. Paley went to Walsall on graduation, to take over the practice of Mr. E. Meek. Formerly associated with Mr. Paley in the practice were his brother, Mr. R. W. Paley, who died in June, 1920, and also a nephew of the same name, who died in 1932. He himself severed his connection with it in December, 1935, being succeeded by Mr. B. E. Davies.

"A keen lover, as well as an exceptionally good judge, of a fine horse, Mr. Paley will no doubt be best remembered by many in the town and district for the appearance and quality of the animals he used to drive in the high Liverpool gig in which he was accustomed to make his calls," states the *Walsall Observer*. "For a long time after motor cars had come into general use he refused to have one, but eventually, after a severe attack of pneumonia, he had regretfully to cease using a horse and take to the modern form of transport."

Amongst other appointments held by Mr. Paley for a long period was that of veterinary surgeon to the Walsall Corporation, and he was formerly a judge at various horse shows in the Midlands.

Interment took place at Perry Barr Crematorium on January 12th.

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### Royal Veterinary College Students' Assistance Fund

The following donations have been received in memory of the late Sir Frederick Hobday and have been credited to the Students' Assistance Fund:—

| | £ | s. | d. |
|---|---|---|---|
| Council of Justice to Animals ... ... ... | 10 | 0 | 0 |
| Dr. J. McCunn ... ... ... ... | 5 | 5 | 0 |
| Society of Veterinary Practitioners ... ... | 5 | 5 | 0 |
| Henderson & Co. ... ... ... ... | 5 | 5 | 0 |
| Miss R. W. E. McQueen ... ... ... | 5 | 0 | 0 |
| Messrs. Cyril and Bernard Mills ... ... | 5 | 0 | 0 |
| Mrs. G. E. Lethbridge ... ... ... ... | 3 | 3 | 0 |
| Mrs. Rogers (per K. Ollerhead) ... ... | 3 | 3 | 0 |
| Lorna Countess Howe ... ... ... ... | 3 | 0 | 0 |
| R. J. Hardy ... ... ... ... ... | 2 | 2 | 0 |
| Baillière, Tindall & Cox ... ... ... | 2 | 2 | 0 |
| Gladstone Mayall ... ... ... ... | 2 | 2 | 0 |
| Central Veterinary Society ... ... ... | 2 | 2 | 0 |
| Agricultural Food Products ... ... ... | 2 | 2 | 0 |
| Brighton and Hove Stadium ... ... ... | 2 | 2 | 0 |
| Mrs. Soper ... ... ... ... ... | 2 | 2 | 0 |
| National Greyhound Racing Society ... ... | 2 | 2 | 0 |
| Yorkshire Veterinary Medical Society ... | 2 | 2 | 0 |
| Mrs. Alice Pugh ... ... ... ... | 2 | 2 | 0 |
| Lady Macleod ... ... ... ... ... | 2 | 0 | 0 |
| Lady Hannan ... ... ... ... ... | 2 | 0 | 0 |
| L. T. Hawksley ... ... ... ... ... | 1 | 7 | 0 |
| J. Willett ... ... ... ... ... | 1 | 1 | 0 |
| O. V. Gunning ... ... ... ... ... | 1 | 1 | 0 |
| Captain E. A. V. Stanley ... ... ... | 1 | 1 | 0 |

| | £ | s. | d. |
|---|---|---|---|
| Royal Society of Medicine ... ... ... | 1 | 1 | 0 |
| C. W. Berry ... ... ... ... ... | 1 | 1 | 0 |
| Knights of the Round Table ... ... ... | 1 | 1 | 0 |
| W. S. King ... ... ... ... ... | 1 | 1 | 0 |
| Savage Club ... ... ... ... ... | 1 | 1 | 0 |
| S. Gurney ... ... ... ... ... | 1 | 1 | 0 |
| Mrs. A. G. Saville ... ... ... ... | 1 | 1 | 0 |
| Mrs. E. W. Bevan ... ... ... ... | 1 | 1 | 0 |
| Sir Stanley Woodwark ... ... ... ... | 1 | 1 | 0 |
| Professor J. G. Wright ... ... ... ... | 1 | 1 | 0 |
| W. Gibson ... ... ... ... ... | 1 | 1 | 0 |
| Miss E. Lloyd ... ... ... ... ... | 1 | 1 | 0 |
| Captain and Mrs. Hobday ... ... ... | 1 | 1 | 0 |
| R. Bolton ... ... ... ... ... | 1 | 1 | 0 |
| M. and A. Sadler ... ... ... ... | 1 | 1 | 0 |
| M. Laws ... ... ... ... ... | 1 | 1 | 0 |
| R. F. Wall ... ... ... ... ... | 1 | 1 | 0 |
| W. H. James ... ... ... ... ... | 1 | 1 | 0 |
| S. E. Samson ... ... ... ... ... | 1 | 1 | 0 |
| G. Elmes ... ... ... ... ... | 1 | 1 | 0 |
| Institute of the Horse and the Pony Club ... | 1 | 1 | 0 |
| L. St. Bel Golledge ... ... ... ... | 1 | 1 | 0 |
| W. S. Mulvey ... ... ... ... ... | 1 | 1 | 0 |
| J. R. Baxter ... ... ... ... ... | 1 | 1 | 0 |
| King Edward's Horse ... ... ... ... | 1 | 1 | 0 |
| Our Dumb Friends' League ... ... ... | 1 | 1 | 0 |
| Dr. E. V. Dunkley ... ... ... ... | 1 | 1 | 0 |
| A. Payne ... ... ... ... ... | 1 | 1 | 0 |
| Dr. Meredith Price ... ... ... ... | 1 | 1 | 0 |
| Sir Edgar Waterlow ... ... ... ... | 1 | 1 | 0 |
| Mrs. A. Denny ... ... ... ... ... | 1 | 1 | 0 |
| Mrs. Wilson and Major Barcroft ... ... | 1 | 0 | 0 |
| E. T. Nethercoat ... ... ... ... | 1 | 0 | 0 |
| Miss P. H. Cane ... ... ... ... | 1 | 0 | 0 |
| Miss E. Aris ... ... ... ... ... | 1 | 0 | 0 |
| Brigadier H. S. Mosley ... ... ... | 1 | 0 | 0 |
| Mr., Mrs. and Miss Higgins ... ... ... | 1 | 0 | 0 |
| Miss A. M. Slade ... ... ... ... | 1 | 0 | 0 |
| Royal College of Veterinary Surgeons ... | 1 | 0 | 0 |
| V. F. Richardson ... ... ... ... | 1 | 0 | 0 |
| Professor Guy Turner ... ... ... ... | 1 | 0 | 0 |
| | £119 | 4 | 0 |
| Donations under £1 ... ... ... ... | 12 | 12 | 6 |
| | £131 | 16 | 6 |

C. G. Freke,
*Bursar and Secretary,*
*Royal Veterinary College.*

* * * * *

## ANIMAL FEEDING STUFFS: RATIONING SCHEME PROPOSED

Our Parliamentary News columns this week reveal the extent to which the Minister of Agriculture has been called upon to deal, in the House, with the enquiries of Members seeking information on the animal feeding-stuffs position. In this connection, the *Times* of January 20th observed: "In the debate on agriculture in the House of Commons next Thursday a good deal will be said about the scarcity of animal feeding stuffs, which is causing concern to M.P.s representing rural constituencies. Various proposals for the rationing of animal feeding stuffs are now being examined, but so far the Minister of Agriculture has not been able to announce the Government's intentions. The reduced supplies of barley for the feeding of animals has also led to the opening of discussions between the Government and representatives of the industry about the possibility of rationing the barley used in the brewing of beer.

"The Minister of Agriculture has stated that available supplies of imported feeding-stuffs are being allocated to distributors in proportion to their pre-war trade, and that they have been asked to distribute these supplies to farmers as equitably as possible. Further proposals are under consideration with a view to improving the efficiency of the machinery of distribution and to overcome the difficulties caused by the diversion of cargoes. The shortage of feeding-stuffs is being felt particularly by keepers of pigs and poultry, and M.P.s complain that in consequence much stock is being slaughtered.

### Improved Supply

"At the outbreak of war the demand on shipping for essential war purposes made it necessary to cut down imports of feeding-stuffs, and it was a deliberate act of policy to secure these economies in imports in the main by reducing the supplies of feeding-stuffs available for the pig and poultry industries. The Minister of Agriculture then advised pig and poultry producers to plan their production programmes for the succeeding 12 months on the assumption that the proportion of their feeding-stuffs derived from imports would be reduced by at least one-third as compared with normal pre-war quantities. This has meant special hardships to producers who are not able to grow much of their own feeding-stuffs.

"Sir Reginald Dorman-Smith was able to say in the House of Commons on Thursday that there is now a material improvement in supply and that this is likely to be maintained during the next two or three months. Every effort is being made by the Government to ensure equitable distribution of the available supplies throughout the country, notwithstanding difficulties arising from the diversion of cargoes. Special consideration is to be given to cases where an acute shortage of feeding stuffs might result in the reduction of foundation poultry breeding stock."

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## THE CONTROL OF PASTEURISATION

"The introduction by Kay and Graham in 1933 of the phosphatase test for controlling the efficiency of pasteurisation constituted one of the most important steps of recent years towards the public health goal of providing the community with a safe milk supply," states the *British Medical Journal* in a recent leader, which continues: "Already it has performed inestimable service, both in this country and on the other side of the Atlantic, where it has been adapted to the less stringent conditions of pasteurisation in force in the United States and Canada. The original test has been modified considerably, and the effect of various factors on the result has been studied in some detail. The Imperial Bureau of Dairy Science, which was recently established at Shinfield, near Reading, could hardly, therefore, have chosen a better subject for its first technical communication* than the phosphatase test. The new monograph will be of particular value to chemists and technical workers who are called upon to use the test day by day. To the public health worker, however, it may prove a little disappointing by reason of its failure to answer one fundamental question—namely, What is the experimental error of the Kay-Graham test under practical conditions? Without this knowledge the exact interpretation of the result is impossible.

"Milk is essentially a biological fluid, very complex in constitution, and never constant from one moment to the next. Every test, therefore, on milk is accompanied by an experimental error the magnitude of which varies greatly with the particular constituent under estimation. With regard to the phosphatase test, it is stated that the phosphatase activity of raw milk may vary considerably, depending to some extent on the stage of lactation, and that it is more closely associated with the fat than with the aqueous portion of the milk. It tends to be raised in milk coming from cows with mastitis. Experience has revealed the existence of differences in the buffer and in the Folin reagents used in different laboratories. The result of the test may be affected in addition by the use of carbolic soap on the hands or the glassware, by contamination of pipettes or of the milk with saliva, by the presence of tobacco smoke, by the use of bottle caps and stoppers containing phenolic resins or impurities, by the growth in the milk of phenol-producing bacteria or of

* H. D. Kay, R. Aschaffenburg, and F. K. Neave (1939). "The Phosphatase Test for Control of Efficiency of Pasteurisation." Imperial Bureau of Dairy Science, Shinfield, near Reading. Technical Communication No. 1. (2s.)

bacteria capable of hydrolysing the substrate disodium phenyl phosphate, by the type of apparatus used for measuring the colour developed, and by sunlight on the bench. The test, moreover, requires great care in its performance and the possession of some technical skill. These are not objections to the test itself, which is undoubtedly an excellent one, but they must lead to the occurrence of an experimental error varying in size with different milks, different workers, and different laboratories. Until its range is known how is it possible to be certain that any colour exceeding 2·3 Lovibond units denotes imperfect pasteurisation or contamination with raw milk?

"There is a good deal of evidence already accumulated in the counties to suggest that many pasteurised milks are being unjustly condemned because a slightly greater depth of colour than the standard is obtained. When it is realised that the relation between the concentration of enzyme and of phenol liberated rises very steeply in the lower range of enzyme content, and that a difference of 0·5 Lovibond unit corresponds to a quite minute amount of residual phosphatase, it is surely important to know how often a difference of this degree can occur as the result of experimental error in titration. When it is further realised that the destruction of phosphatase in holder pasteurisation occurs according to a monomolecular reaction, and that therefore the amount remaining after exposure to heat for a given time depends on the initial concentration present, there seems still further justification for wanting to know the nature of the frequency distribution of the results obtained under practical conditions. Would it not be possible to arrange for a comparative test to be carried out on an adequate number of milks between different workers (*a*) in the same laboratory and (*b*) in different laboratories? The recent international comparative trials of the Widal reaction brought to light surprising and unexpected differences between different laboratories in the accuracy of serum titration, and it seems not improbable that a similar trial, limited to this country alone, might well reveal more than minimal differences in the results of the phosphatase test. At any rate it is worth trying, and whatever the result the practical interpretation of the test will be placed on a much firmer footing."

* * * * *

## THE SITE OF ANTIBODY FORMATION

"The much-debated question of where antibodies are formed is only part of the larger problem of the source of serum proteins generally," stated the *British Medical Journal* recently. "To attribute this function to the liver, an organ already, it would seem, overburdened with multifarious supposed activities, is easy but unconvincing, and now known to be incorrect to the extent that other tissues are certainly involved as well. All of these tissues, the liver included, contain reticulo-endothelial cells, and it is a reasonable hypothesis that these cells form the globulins of which antibodies consist, if not others as well. This idea was indeed current before certain evidence now available existed to support it, since it was well known that these cells phagocytosed bacteria and other antigens, and the specific antibody to which these gave rise could only be supposed to be formed at the site of their destruction. To have brought this process under direct visual observation, confirming its reality and to some extent following its intimate mechanism, is the claim now made by Florence Sabin.* This achievement was made possible by the use of a 'marked antigen'—that is, an antigenic substance the particles of which are recognisable microscopically in the tissues. The substance used was the alum precipitate from an azo-dye—egg-albumen compound synthesised previously by Heidelberger and Kendall for the quantitative study of antigen-antibody reaction by means of colorimetry. Suspensions of this compound were injected into rabbits by various routes, and it could then be identified easily in the cytoplasm of phagocytic cells of the reticulo-endothelial system, the situation of these cells naturally depending on the route of the injection. Two essential facts emerge from the numerous details of a study of the subsequent behaviour of these cells. One is that the disappearance of the dye-protein from them after apparent digestion in a vacuole coincides with the appearance of antibody in the circulating blood. The second is that at this stage there is a profuse detachment of fragments from the surface of these cells. The shedding of 'surface films' is a function of the normal macrophage, and its observation was what led Ranvier to give to these cells the name 'clasmatocyte.' Sabin concludes that this is the mechanism by which these cells liberate globulins, and adduces a further argument from embryological data which supports the same conclusion. The normal process of globulin formation by reticulo-endothelial cells is thus accelerated and qualitatively altered by the phagocytosis of an antigen. Sabin goes so far in final conclusion from these observations as to define an antigen as 'a substance which can specifically modify the synthesis of the cytoplasm of the cells of the reticulo-endothelial system.' This is a far-reaching and most important conclusion, which one would hesitate to accept in full from any less experienced observer, since, although the serological data concerned are exact enough, the rate of disappearance of particles from cells in living tissue is scarcely amenable to quantitative statement, and it is on the correlation of these two kinds of observation that the conclusion depends. It nevertheless bears the stamp of truth and accords well with all other knowledge of the subject. That an important constituent of the blood is formed by the disintegration of shed particles of cell cytoplasm rather than by expulsion from cells in an already dispersed form is a novel idea, and it naturally raises the questions whether other serum proteins are formed in the same way, and whether a similar mechanism takes part in other syntheses in the body."

* *J. exp. Med.*, 1939, **70**, 67.

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## CATTLE AND MARRIAGE AMONG SOUTHERN BANTU

"Among the Lovedu of the north-eastern Transvaal marriage, being patrilocal, involves, as among other Southern Bantu tribes, the transfer of *munywalo*. The nature of this institution has been analysed by J. D. Krige (*Africa*, **12**, 4; 1939), who points out that the various interpretations in which it is regarded as the legalisation of marriage, as a guarantee of a wife's status or good behaviour, and in terms of compensation, economic or ritual, are in the nature of parodies. To discover the real place of *munywalo* in the social system, it is necessary to appreciate the relation of the cattle exchanges to the social structure, as cattle constitute the essence of *munywalo* and the exchanges are the most important use to which cattle are put. The people do not rely on cattle raising. Milk is not used at all; the meat of cattle which die is much appreciated as a relish; the skins are used or discarded indifferently. Ploughing has added to the uses of the cattle, but social values centre in agricultural productivity rather than the role of cattle in contributing to this result. Cattle constitute no great standard of the kind of affluence that is important, this being based on maize. It is hidden rather than displayed, and gives no man the privileges of rank. Yet like other Bantu tribes, the Lovedu have a strong emotional attachment to their cattle, though they are not regarded as sacred. Nevertheless, they are not sold or slaughtered, though there is no taboo against it. This is neither economic nor anti-economic, but *sui generis*. The chief function of cattle is in *nywalo* exchange, which accounts for more than 95 per cent. of all transfers of cattle, the only other occasion being when judgment debts are paid. There are about 330 marriages each year, for which the theoretical minimum number of cattle needed is about 2,600—only 400 short of the total in the society. A distinction is drawn between cattle which have become involved in *munywalo* exchange and those which are unencumbered. Thus about 87 per cent. of the cattle are

held in a chain of rights and restrictions which the temporary owner cannot ignore. The exchange conditions, and is conditioned by, two main social arrangements, cross-cousin marriage, and the allocation of a sister's *munywalo* to her brother. Hence arise series of cattle linkages by which social groups, originally unrelated, are bound together in a close network of social interests and responsibilities."—*Nature.*

* * * * *

## THE FATE OF THE TABLET

The following annotation from a recent issue of *The Lancet* may be of interest to veterinary clinicians:—

"Since it became known that monographs on compressed tablets might be included in the British Pharmacopoeia some useful work on standards has been done, the practical results of which will doubtless be helpful to the Pharmacopoeia Commission. The size and weight of the tablet need to be defined so as to ensure a uniformity of appearance and thus prevent the patient's suspicion when his second box differs from the first. It is, however, still more important that there should be official standards requiring that the tablets when swallowed shall disintegrate in the stomach or intestine rapidly. Berry,[1] in a paper read at this year's meeting of the British Pharmaceutical Conference, states that some tablets, either because of high compression or the method of preparing the ingredients, may actually pass through the alimentary tract unchanged. Brown,[2] on the same occasion, pointed out that tests for disintegration vary considerably in their results and that a standard test which would be universally reproducible was needed. He said that undue significance should not be given to differences in rate of disintegration, since a tablet which disintegrates anywhere within a certain time limit can be considered satisfactory. Berry's experiments showed that most disintegration tests for tablets possessed the disadvantage of not having a definite end-point. In one method tablets are suspended on a wire loop just below the surface of a column of water at 18° to 20° C. The end-point occurs when all the tablet particles have fallen. Such a method works well with certain tablets, particularly those which contain large insoluble crystals, but it does not work with such tablets as calcium lactate which form a sticky mass. The Swiss Pharmacopoeia specified a method of gently shaking a tablet with water at 37° C. and noting the times of disintegration. This again works well with tablets which disintegrate evenly but the end-point is sometimes very indefinite. The method suggested by Berry depends upon a weighted wire cutting through the tablet after the tablet has been softened in water; the end-point is the fall of the weight and is consequently quite definite. Brown uses a compression balance, in which the weight necessary to crush the tablet immersed in different media is measured. Either of these methods may commend themselves to the Pharmacopoeia Commission in their task of making sure that compressed tablets do not come out of the patient's body in the form in which they go in."

[1] Berry, H., *Quart. J. Pharm.*, July, 1939, p. 501.
[2] Brown, C. L. M., *Ibid*, p. 489.

# CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

*The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.*

* * * * *

## WINDSOR LAD

To the Editor of the Veterinary Record

Sir,—There appears in the "News" column of your last issue a paragraph concerning the thoroughbred stallion Windsor Lad. There has been somewhat corresponding information in the lay Press. This latter can be ignored, but in all honesty to those leading veterinary surgeons who supported me, the veterinary adviser of the late owner of this horse, both professionally and morally, I cannot let pass without comment the appearance of such a grossly misleading statement, to use no stronger term, in the *Veterinary Record*, the official journal of the National Veterinary Medical Association. As a member of that Association, as too are the five veterinary surgeons who supported me, and as the veterinary surgeon chiefly responsible for the "Windsor Lad Case," I may surely ask you, Sir, who was the writer of this paragraph and at whose instigation or on whose authority was it published in this our official journal?

The "Windsor Lad Case" is a much too important one, probably one of if not *the* most important ever contested from a veterinary-medical point of view, to be dealt with by "scrap"!

It may be that the time is not yet ripe for a complete record of the case to be published, but I am able to assure our members that the legal aspect of the case will be published; and I trust that the pathological aspect of it will be similarly dealt with. To make this latter complete, however, a scientifically exhaustive *post-mortem* examination of the horse's head, whenever that may become possible, at an independent institution must be carried out.

There is, however, another aspect to your publication which may have escaped the deliberations of your Editorial Committee but which certainly should, in my humble opinion, have been considered, namely, to what extent may this statement published in the official journal of the profession be accepted by veterinary surgeons and the lay Press, and through them horse owners and breeders, as an assurance of the complete recovery and well-being of this noted stallion? Was this particular point overlooked by the writer of the paragraph?

There is an incontrovertible fact in this case. On January 4th, 1940, the Insurance Company concerned made an agreement which involved it *in* payment of a sum very considerably larger than it would have had to pay the claimant had it paid its full indemnity under the policy 13 months ago. To what extent does this confirm that the horse was cured of the *unusual* diseased condition affecting the nasal air sinuses on the right side of its head?

Before anything was published in *The Record* I feel very strongly it should have been submitted for approval to the veterinary surgeons who hold diametrically opposed views on the question as to whether Windsor Lad has been cured.

I am, dear Sir,
Yours faithfully,
E. Brayley Reynolds.

Newmarket.
*January 22nd*, 1940.

* * * * *

## THE LONDON ZOOLOGICAL SOCIETY AND THE VETERINARY PROFESSION

To the Editor of the Veterinary Record

Sir,—Is the question as to the institution selected for the task of solving the mystery of the death of Sung, the Giant Panda, of any real importance at the present critical point in the history of the profession?

Surely the Zoological Society cannot be accused of grave discourtesy in failing to recognise our position in such matters when the Ministries of Food and Agriculture have failed to show that they regard us as the competent authority to deal with the less romantic but native species classed as food animals.

Yours faithfully,
John C. Grant.

North of Scotland College of Agriculture,
Veterinary Department,
Marischal College,
Aberdeen.
*January 23rd*, 1940.

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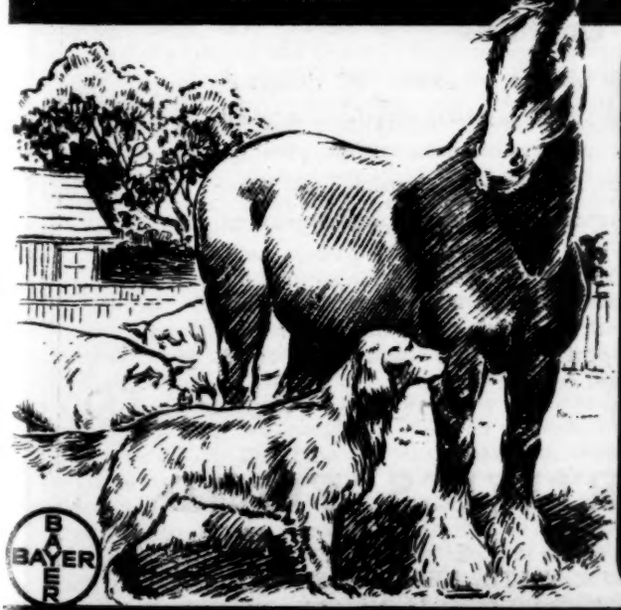

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[ No. 5 ]

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